

## Complete Summary

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### GUIDELINE TITLE

Preoperative tests: the use of routine preoperative tests for elective surgery: evidence, methods, & guidance.

### BIBLIOGRAPHIC SOURCE(S)

National Collaborating Centre for Acute Care. Preoperative tests: the use of routine preoperative tests for elective surgery: evidence, methods & guidance. London (UK): National Institute for Clinical Excellence (NICE); 2003 Jun. 108 p. [118 references]

### GUIDELINE STATUS

This is the current release of the guideline.

## COMPLETE SUMMARY CONTENT

SCOPE  
 METHODOLOGY - including Rating Scheme and Cost Analysis  
 RECOMMENDATIONS  
 EVIDENCE SUPPORTING THE RECOMMENDATIONS  
 BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS  
 CONTRAINDICATIONS  
 QUALIFYING STATEMENTS  
 IMPLEMENTATION OF THE GUIDELINE  
 INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT  
 CATEGORIES  
 IDENTIFYING INFORMATION AND AVAILABILITY  
 DISCLAIMER

## SCOPE

### DISEASE/CONDITION(S)

Conditions that require elective surgery

### GUIDELINE CATEGORY

Evaluation  
 Risk Assessment

### CLINICAL SPECIALTY

Anesthesiology  
Cardiology  
Colon and Rectal Surgery  
Family Practice  
Hematology  
Internal Medicine  
Nephrology  
Neurological Surgery  
Nursing  
Orthopedic Surgery  
Pediatrics  
Plastic Surgery  
Pulmonary Medicine  
Surgery  
Thoracic Surgery

#### INTENDED USERS

Advanced Practice Nurses  
Allied Health Personnel  
Health Care Providers  
Health Plans  
Hospitals  
Nurses  
Physician Assistants  
Physicians

#### GUIDELINE OBJECTIVE(S)

- To evaluate the evidence relating to the "value" of routine preoperative testing in elective surgical patients and in selected groups of patients with comorbid conditions by carrying out a systematic review of the literature
- To develop guidance for clinicians on the use of preoperative investigations in normal healthy adults and children (American Society of Anesthesiologists (ASA) grade 1), and in adults with mild (ASA grade 2) and severe (ASA grade 3) systemic disease arising from selected comorbid conditions
- To produce an illustrative economic model investigating plausible rates of abnormal results, rates of changes in management, rates of postoperative complications avoided by preoperative investigations, and the subsequent costs of preoperative investigations and of adverse events and their sequelae

#### TARGET POPULATION

- All uncomplicated, healthy children or adults (i.e., classified as American Society of Anesthesiologists [ASA] grade 1) undergoing elective surgery
- All adult patients with mild or severe systemic comorbidity (i.e., classified as ASA grades 2 and 3, respectively) from cardiovascular, respiratory, or renal disease undergoing elective surgery

#### INTERVENTIONS AND PRACTICES CONSIDERED

Preoperative Testing

1. Chest x-ray
2. Resting electrocardiography (ECG)
3. Full blood count, including
  - Haemoglobin measurement
  - White blood cell count
  - Platelet count
4. Haemostasis tests
  - Prothrombin time (PT)
  - Activated partial thromboplastin time (APTT)
  - International normalised ratio (INR)
5. Renal function tests
  - Potassium
  - Sodium
  - Creatinine
  - Urea levels
6. Blood glucose test
7. Urine "dipstick" test
  - pH
  - Protein
  - Glucose
  - Ketones
  - Blood/haemoglobin
8. Sickle cell gene test (with genetic counseling)
9. Pregnancy test
10. Blood gases (Phase B only)
  - Arterial blood gas analysis or venous blood gas analysis in combination with pulse oximetry
11. Pulmonary function tests
  - Peak expiratory flow rate
  - Forced vital capacity
  - Forced expiratory volume
12. Obtaining patient consent

#### MAJOR OUTCOMES CONSIDERED

- Rate of perioperative and postoperative complications
- Estimates of the frequency, risk difference, or relative risk of an abnormal result
- Change of clinical management of the patient
- Cost effectiveness
- Diagnostic accuracy of preoperative test results
- Positive predictive value of preoperative test results

### METHODOLOGY

#### METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)  
 Hand-searches of Published Literature (Secondary Sources)  
 Searches of Electronic Databases

## DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A systematic review of the value of generic preoperative investigations in elective surgical patients was carried out. A generic preoperative test was defined as an investigation recommended preoperatively for all patients of a particular type (e.g., in a certain age range or with a particular comorbidity), that was not directly indicated by either the surgical procedure or the condition for which the procedure is being carried out. The starting point for this review was to update the Health Technology Assessment (HTA) report to include additional evidence published between January 1996 and February 2002 and to identify and review all evidence (1966-2002) for additional tests covered by the guideline (i.e., pregnancy tests, lung function tests and blood gases). For a full transcript of the review, please refer to Appendix 1 of the full version of the original guideline document CD-ROM.

### Search Strategy for Identification of Studies

Databases were searched from 1995 to December 2001 for tests considered in Phase A (tests in normal healthy patients, including children, varying by age and by grade of surgery [ASA grade 1] and June 2002 for tests considered in Phase B (tests of adult patients with three common comorbidities [i.e., cardiovascular disease, respiratory disease, and renal disease]). In Phase A, the search strategies deliberately included one year overlapping with the HTA review (1995) to ensure that articles were not missed because of a time lag in indexing in bibliographic databases. For tests not included in the HTA review (pregnancy testing, sickle cell tests, blood gases, and lung function tests), MEDLINE was searched from 1966 and EMBASE from 1989.

Studies were identified by the following methods:

- Electronic searching
  - The Cochrane Library 2001 issue 4 (including Cochrane Database of Systematic Reviews [CDSR], Database of Abstracts of Reviews of Effectiveness [DARE], Cochrane Controlled Trials Register [CCTR], HTA database, National Health Service [NHS] Economic Evaluations Database)
  - MEDLINE (from 1966/1995 to December 2001/June 2002)
  - EMBASE (from 1989/1995 to December 2001/June 2002)
  - Science Citation Index (to December 2001/June 2002)
  - HealthSTAR (up to the end of the year 2000 when the database ceased to exist)
- Manual searching of reference lists in identified studies and reviews
- Professional contacts

The search strategies used for MEDLINE and EMBASE are detailed in the full systematic review Appendix 1, CD-ROM of the full version of the original guideline document). These search strategies were adapted for searching other databases.

### Selection of Studies

Studies were identified and excluded as follows:

- Papers were excluded after reading the titles and abstract alone if they were considered definitely irrelevant.
- Full publications of the remaining articles were obtained and papers were excluded if they were irrelevant. A 10% sample of papers was reviewed by a second reviewer to ensure interobserver consistency. Disagreements were used to inform the selection and were resolved by discussion. No formal analysis of agreement was performed.
- Data were extracted from all eligible papers

## Cost Effectiveness

For cost analysis, additional databases were searched (limited to the years 1995-2001):

- Health Economic Evaluations Database (<http://www.ohe-heed.com>)
- NHS Economic Evaluations Database (<http://nhscrd.york.ac.uk/nhsdhp.htm>)

Primary data was also collected from three district general hospitals and the British National Formulary (see Appendix 5 in the full version of the original guideline document for details).

## NUMBER OF SOURCE DOCUMENTS

117

## METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus

Weighting According to a Rating Scheme (Scheme Given)

## RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

### Levels of Evidence

I a: Evidence from meta analysis of randomised controlled trials

I b: Evidence from at least one randomised controlled trial

II a: Evidence from at least one controlled study without randomisation

II b: Evidence from at least one other type of quasi-experimental study

III: Evidence from non-experimental descriptive studies, such as comparative studies and case-control studies

IV: Evidence from expert committee reports or opinions and/or clinical experience of respected authorities

## METHODS USED TO ANALYZE THE EVIDENCE

## Systematic Review with Evidence Tables

### DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

#### Data Extraction

Data regarding the patient population, interventions, and outcomes were extracted by one of two reviewers. Again, data extraction for 10% of papers was performed independently by two reviewers.

Studies were categorised as descriptive, diagnostic, or as addressing effectiveness questions. Characteristics of included studies are shown in the full systematic review (see Appendix 1, of the full version of original guideline document).

The methodological quality of all studies was assessed. Three data forms were created to record aspects of quality specific to the three types of evidence. Papers were assessed by one or two reviewers, with a 10% sample assessed independently by two reviewers. Disagreements were discussed with a third reviewer if necessary.

Methods and results for the Economic review of the cost of tests included in the guideline are presented in Appendix 5, of the full version of the original guideline document.

### METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Nominal Group Technique)  
Informal Consensus

### DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The guideline was developed by a Guideline Development Group (GDG) made up of multiprofessional and lay working group members who represented the main stakeholders for this guideline. The GDG was convened by the National Collaborating Centre for Acute Care (NCCAC).

In agreeing the scope for the guideline, the GDG debated four key issues:

1. Interpretation of the phrase "routine preoperative testing"
2. Reasons for testing
3. Definition of "change in clinical management"
4. Cost effectiveness

#### Drafting the Guideline

The recommendations were developed from consensus opinion and from the review of the literature. Tables in Chapter 6 of the full version of original guideline document summarise the consensus reached by panel members, both about situations in which it is considered appropriate to test and about situations in which testing is considered inappropriate. Where there is uncertainty (i.e. where

no consensus was reached), clinical discretion must be used to determine the appropriateness of a test for a patient. In addition, through discussion with clinicians on the GDG, patient representatives, panelists, and other clinicians consulted, the GDG has attempted to identify "good practice" points. These points relate to areas for which a clear informal consensus was expressed, but which were outside the scope of the consensus meetings.

## RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

- A. Directly based on level I evidence
- B. Directly based on level II evidence or extrapolated from recommendation from level I evidence
- C. Directly based on level III evidence or extrapolated from recommendation from level I or II evidence
- D. Directly based on level IV evidence or extrapolated from recommendation from level I, II, or III evidence

## COST ANALYSIS

The economic review presented in the guideline has four components:

- Estimation of unit costs of the tests under consideration
- A review of the literature around the economics of preoperative testing
- Simple economic modelling of the cost effectiveness of preoperative testing in England and Wales
- Simple economic modelling of the cost impact of preoperative testing in England and Wales

For cost analysis, in addition to the main databases searched for the main systematic review (see Chapter 3 of the full version of the original guideline document), the following additional databases were also searched (limited to the years 1995-2001):

- Health Economic Evaluations Database (<http://www.ohe-heed.com>)
- NHS Economic Evaluations Database (<http://nhscrd.york.ac.uk/nhsdhp.htm>).

Primary unit cost data was also collected from three district general hospitals and the British National Formulary (see Appendix 5 of the original guideline document for details).

For the modelling of cost-effectiveness of preoperative testing for England and Wales a very simple decision analytic model was constructed for each test like the one represented by the decision tree in Figure 1 in Appendix 5 in the full version of the original guideline document. A decision analysis simply calculates an overall outcome, for example cost, as the sum of all the individual outcomes, each weighted by the probability of that individual outcome occurring. The costs of the tests themselves were estimated from the literature and from a small sample of National Health Service (NHS) Trusts. However, as noted in Table 1 in Appendix 5 of the original guideline document, the overall "incremental" cost of testing to the NHS also includes certain costs arising as a consequence of testing (B2-B9) and there may be costs incurred by the patient and their families (C1-C5). An

approximate cost of further diagnostic testing (B2) was estimated by assuming that it consisted of one extra outpatient appointment for all those patients with an initial positive test. This cost is clearly tentative as the real cost is unknown and varies according to the test taken, and we know that for a proportion of tests the results are not read. The mean cost of a surgical outpatient appointment was extracted from the NHS Reference Costs 2000 database.

For modelling the cost impact of the new preoperative testing guidelines, the cost of implementing the guidelines proposed was calculated by estimating the expected number of each test that would be indicated by the guidelines and multiplying these numbers by the unit costs (Section 1.3.1 of Appendix 5 in the full version of the original guideline document).

The economic aspects of preoperative testing are discussed in Appendix 5 of the full version of the original guideline document and are summarised by the following key points.

- Preoperative testing represents a substantial drain on the resources of the NHS in England and Wales
- Published evidence, mainly from the USA, suggests that substantial cost savings can be achieved by eliminating "unnecessary" preoperative testing
- Such cost savings may not be achievable in England and Wales, if:
  - the prevalence of testing is lower; or
  - there are subsequent cost-savings attributable to testing
- Cost impact analysis suggests that testing costs could potentially be reduced. However, in any Trust, the costs may be either increased or decreased depending on current testing practices. Any cost savings would be offset by implementation costs.
- Tests that add to NHS costs are justified if they are accompanied by substantial improvements in patient outcomes (i.e. if they are cost-effective).
- The level of cost-effectiveness of each preoperative test has not been established for any population subgroup. Estimating cost effectiveness would require carefully collected empirical evidence on:
  - The number of cases detected
  - The health outcomes associated with detecting a case
  - Resources used (and their cost) as a consequence of detecting a case

The context of testing may have important resource implications. A number of studies have found that anaesthetist-led preoperative evaluation clinics can save substantially on resource use. The literature suggests that valuable health service resources could be saved if:

- Staff responsible for ordering tests are those that are best informed about the utility of testing (be they surgeons or anaesthetists)
- Wherever possible tests should be conducted in advance of the day of surgery to avoid last minute cancellations and to ensure optimal use of operating theatres (perhaps in a dedicated preoperative evaluation clinic)
- Staff should check that the test has not already been recently ordered

## METHOD OF GUIDELINE VALIDATION



External Peer Review  
Internal Peer Review

## DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The draft guideline was distributed for a first round of consultation in July 2002. It was reviewed by stakeholders, collaborators, and interested parties (panellists for the consensus processes and clinicians interviewed; see Acknowledgements of the original guideline document) in addition to members of the Guideline Development Group (GDG).

Extensive comments were reviewed and the report was revised. These comments and responses to them can be viewed on the National Institutes of Clinical Excellence (NICE) Web site. Patient representatives on the Guideline Development Group contributed to the drafting process. After a second consultation, further modifications were made, with final submission on the 4 April 2003.

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

The following guidance is based upon the best available evidence. All of the recommendations are grade D recommendations, which are based upon level IV evidence - that is, expert opinion derived from a consensus development process and the clinical experience of the Guideline Development Group.

For the tables set out by surgery grade and American Society of Anesthesiologists (ASA) grade, age categories are shown across the top of each table. For a patient with more than one comorbidity, follow the recommendations in all relevant tables.

Recommendations for individual tests are indicated as follows:

No: Test not recommended

Consider: Test to be considered (the value of carrying out a preoperative test is not known, and may depend on specific patient characteristics.)

Yes: Test recommended

### Grades of Surgery

Surgery Grades	Example
Grade 1 (minor)	Excision of lesion of skin; drainage of breast abscess
Grade 2 (intermediate)	Primary repair of inguinal hernia; excision of varicose vein(s) of leg; tonsillectomy/adentonsillectomy; knee arthroscopy
Grade 3 (major)	Total abdominal hysterectomy; endoscopic resection of prostate; lumbar discectomy; thyroidectomy
Grade 4 (major+)	Total joint replacement; lung operations; colonic resection; radical neck dissection; neurosurgery; cardiac surgery

ASA grades are a simple scale describing fitness to undergo an anaesthetic. The ASA clearly states that it does not endorse any elaboration of these definitions. However, anaesthetists in the UK often qualify (or interpret) these grades as relating to functional capacity -- that is comorbidity that does not (ASA Grade 2) or that does (ASA Grade 3) limit a patient's activity (see "Characterisation of 'Mild' and 'Severe' Comorbidity, Corresponding to ASA Grades 2 and 3, for Cardiovascular, Respiratory and Renal Comorbidities" below).

## ASA Grades

ASA Grade 1: "Normal healthy patient" (that is without any clinically important comorbidity and without clinically significant past/present medical history)

ASA Grade 2: "A patient with mild systemic disease"

ASA Grade 3: "A patient with severe systemic disease"

ASA Grade 4: "A patient with severe systemic disease that is a constant threat to life"

Characterisation of 'Mild' and 'Severe' Comorbidity, Corresponding to ASA Grades 2 and 3, for Cardiovascular, Respiratory and Renal Comorbidities

	ASA Grade 2 "A patient with mild systemic disease"	ASA Grade 3 "A patient with severe systemic disease"
Cardiovascular (CVD)		
Current angina	Occasional use of GTN spray (two to three times per month). Does not include patients with unstable angina who would be ASA grade 3.	Regular use of GTN spray (2 to 3 times per week) or unstable angina
Exercise tolerance	Not limiting activity	Limiting activity
Hypertension	Well controlled using a single antihypertensive medication	Not well controlled, requiring multiple antihypertensive medications
Diabetes	Well controlled, no obvious diabetic complications	Not well controlled, diabetic complications (e.g. claudication, impaired renal function)
Previous coronary revascularisation	Not directly relevant - depends on current signs and symptoms	Not directly relevant - depends on current signs and symptoms
Respiratory disease		
COAD/COPD	Productive cough, wheeze well controlled by inhalers, occasional episodes of acute chest infection	Breathlessness on minimal exertion (e.g., stair climbing, carrying shopping); distressingly wheezy much of the time; several episodes per year of acute chest infection
Asthma	Well controlled by medications/inhalers; not limiting	Poorly controlled; limiting lifestyle; on high dose of

	ASA Grade 2 "A patient with mild systemic disease"	ASA Grade 3 "A patient with severe systemic disease"
Cardiovascular (CVD)		
	lifestyle	inhaler/oral steroids; frequent hospital admission on account of asthma exacerbation
Renal disease	Elevated creatinine (creatinine >100 micromole/L and <200 micromol/L), some dietary restrictions	Documented poor renal function (creatinine >200 micromol/L), regular dialysis programme (peritoneal or haemodialysis)

COAD, chronic obstructive airways disease; COPD chronic obstructive pulmonary disease; GTN, glyceryl trinitrate  
Further examples are available in Appendix 2 of the full version of the guideline (see Section 5).

### Grade 1 Surgery (Minor)

ASA Grade 1: Children <16 years

Test	Age				
	<6 months	≥6 to <12 months	≥1 to <5 years	≥5 to <12 years	≥12 to <16 years
Chest x-ray	No	No	No	No	No
Electrocardiogram (ECG)	No	No	No	No	No
Full blood count	No	No	No	No	No
Haemostasis	No	No	No	No	No
Renal function	No	No	No	No	No
Random glucose	No	No	No	No	No
Urine analysis <sup>a</sup>	No	No	No	No	No

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

ASA Grade 1: Adults (≥16 years)

Test	Age (years)			
	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	No	No	No	No
ECG	No	Consider	Consider	Yes
Full blood count	No	No	Consider	Consider
Haemostasis	No	No	No	No
Renal function	No	No	Consider	Consider
Random glucose	No	No	No	No
Urine analysis <sup>a</sup>	Consider	Consider	Consider	Consider

\*Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

#### ASA Grade 2: Adults with Comorbidity from Cardiovascular Disease (CVD)

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	No	Consider	Consider	Consider
ECG	Yes	Yes	Yes	Yes
Full blood count	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No
Renal function	Consider	Consider	Consider	Consider
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	No	No	No	No
Lung function	No	No	No	No

#### ASA Grade 3: Adults with Comorbidity from CVD

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Yes	Yes	Yes	Yes
Full blood count	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No
Renal function	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

#### ASA Grade 2: Adults with Comorbidity from Respiratory Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray <sup>b</sup>	No	Consider	Consider	Consider
ECG	No	Consider	Consider	Consider
Full blood count	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No
Renal function	No	No	Consider	Consider
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood Gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

<sup>b</sup>Chest x-rays may be considered if there has been a change in patient's symptoms or if the patient needs ventilator support.

### ASA Grade 3: Adults with Comorbidity from Respiratory Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Consider	Consider	Consider	Consider
Full blood count	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No
Renal function	Consider	Consider	Consider	Consider
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

### ASA Grade 2: Adults with Comorbidity from Renal Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray <sup>c</sup>	No	No	No	Consider
ECG <sup>d</sup>	No	Consider	Consider	Consider
Full blood count	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No
Renal function	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	No	No	No	No
Lung function	No	No	No	No

<sup>c</sup>Chest x-rays may be considered if the patient has signs of other comorbidities often associated with renal disease, such as hypertension and coronary heart failure.

<sup>d</sup>Depending on the cause of renal disease (e.g., diabetes and hypertension)

### ASA Grade 3: Adults with Comorbidity from Renal Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray <sup>c</sup>	No	No	Consider	Consider
ECG	No	Consider	Consider	Consider
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

<sup>c</sup>Chest x-rays may be considered if the patient has signs of other comorbidities often associated with renal disease, such as hypertension and coronary heart failure.

### Grade 2 Surgery (Intermediate)

#### ASA Grade 1: Children (<16 years)

Test	Age				
	<6 months	≥6 to <12 months	≥1 to <5 years	≥5 to <12 years	≥12 to <16 years
Chest x-ray	No	No	No	No	No
ECG	No	No	No	No	No
Full blood count	No	No	No	No	No
Haemostasis	No	No	No	No	No
Renal function	No	No	No	No	No
Random glucose	No	No	No	No	No
Urine analysis <sup>a</sup>	No	No	No	No	No

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

#### ASA Grade 1: Adults (≥16 years)

Test	Age (years)			
	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	No	No	No	No
ECG	No	Consider	Consider	Yes
Full blood count	No	Consider	Yes	Yes
Haemostasis	No	No	No	No
Renal function	No	No	Consider	Consider
Random glucose	No	Consider	Consider	Consider
Urine analysis <sup>a</sup>	Consider	Consider	Consider	Consider

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

#### ASA Grade 2: Adults with Comorbidity from CVD

Test	Age (years)			
	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Yes	Yes	Yes	Yes
Full blood count	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No
Renal function	Consider	Consider	Yes	Yes

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	No	No	No	No
Lung function	No	No	No	No

#### ASA Grade 3: Adults with Comorbidity from CVD

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Yes	Yes	Yes	Yes
Full blood count	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No
Renal function	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

#### ASA Grade 2: Adults with Comorbidity from Respiratory Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray <sup>b</sup>	Consider	Consider	Consider	Consider
ECG	No	Consider	Consider	Consider
Full blood count	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No
Renal function	No	Consider	Consider	Consider
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

<sup>b</sup>Chest x-rays may be considered if there has been a change in patient's symptoms, or if the patient needs ventilator support

#### ASA Grade 3: Adults with Comorbidity from Respiratory Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Consider	Consider	Yes	Yes
Full blood count	Consider	Consider	Consider	Yes
Haemostasis	No	No	No	No
Renal function	Consider	Consider	Consider	Consider

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	Consider	Consider	Consider	Consider

#### ASA Grade 2: Adults with Comorbidity from Renal Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray <sup>c</sup>	No	No	Consider	Consider
ECG <sup>d</sup>	Consider	Consider	Yes	Yes
Full blood count	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No
Renal function	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	No	No	No	No
Lung function	No	No	No	No

<sup>c</sup>Chest x-rays may be considered if the patient has signs of other comorbidities often associated with renal disease, such as hypertension and coronary heart failure.

<sup>d</sup>Depending on the cause of renal disease (e.g., diabetes and hypertension)

#### ASA Grade 3: Adults with Comorbidity from Renal Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Consider	Consider	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

#### Grade 3 Surgery (Major)

#### ASA Grade 1: Children (<16 years)

	Age
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Test	<6 months	≥6 to <12 months	≥1 to <5 years	≥5 to <12 years	≥12 to <16 years
Chest x-ray	No	No	No	No	No
ECG	No	No	No	No	No
Full blood count	Consider	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No	No
Renal function	Consider	Consider	Consider	Consider	Consider
Random glucose	No	No	No	No	No
Urine analysis <sup>a</sup>	Consider	Consider	Consider	Consider	Consider

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

#### ASA Grade 1: Adults (≥16 years)

Test	Age (years)			
	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	No	No	Consider	Consider
ECG	No	Consider	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	No	No	No	No
Renal function	Consider	Consider	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis <sup>a</sup>	Consider	Consider	Consider	Consider

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

#### ASA Grade 2: Adults with Comorbidity from CVD

Test	Age (years)			
	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Yes	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	No	No	No	No
Renal function	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

#### ASA Grade 3: Adults with Comorbidity from CVD

	Age (years)
--	-------------

Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Yes	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

#### ASA Grade 2: Adults with Comorbidity from Respiratory Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray <sup>b</sup>	Consider	Consider	Consider	Consider
ECG	Consider	Consider	Consider	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	No	No	No	No
Renal function	Consider	Consider	Yes	Yes
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	Consider	Consider	Consider

<sup>b</sup>Chest x-rays may be considered if there has been a change in patient's symptoms, or if the patient needs ventilator support

#### ASA Grade 3: Adults with Comorbidity from Respiratory Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Consider	Consider	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	No	No	No	No
Renal function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	Consider	Consider	Consider	Consider

#### ASA Grade 2: Adults with Comorbidity from Renal Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
ECG <sup>d</sup>	Consider	Consider	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

<sup>d</sup>Depending on the cause of renal disease (e.g., diabetes and hypertension)

#### ASA Grade 3: Adults with Comorbidity from Renal Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Consider	Consider	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

#### Grade 4 Surgery (Major +)

#### ASA Grade 1: Children (<16 years)

	Age				
Test	<6 months	≥6 to <12 months	≥1 to <5 years	≥5 to <12 years	≥12 to <16 years
Chest x-ray	No	No	No	No	No
ECG	No	No	No	No	No
Full blood count	Consider	Consider	Consider	Consider	Consider
Haemostasis	No	No	No	No	No
Renal function	Consider	Consider	Consider	Consider	Consider
Random glucose	No	No	No	No	No
Urine analysis <sup>a</sup>	Consider	Consider	Consider	Consider	Consider

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

### ASA Grade 1: Adults ( $\geq 16$ years)

	Age (years)			
Test	$\geq 16$ to $< 40$	$\geq 40$ to $< 60$	$\geq 60$ to $< 80$	$\geq 80$
Chest x-ray	No	No	Consider	Consider
ECG	No	Consider	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis <sup>a</sup>	Consider	Consider	Consider	Consider

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

### ASA Grade 2: Adults with Comorbidity from CVD

	Age (years)			
Test	$\geq 16$ to $< 40$	$\geq 40$ to $< 60$	$\geq 60$ to $< 80$	$\geq 80$
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Yes	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

### ASA Grade 3: Adults with Comorbidity from CVD

	Age (years)			
Test	$\geq 16$ to $< 40$	$\geq 40$ to $< 60$	$\geq 60$ to $< 80$	$\geq 80$
Chest x-ray	Consider	Consider	Yes	Yes
ECG	Yes	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

### ASA Grade 2: Adults with Comorbidity from Respiratory Disease

	Age (years)			
Test	$\geq 16$ to $< 40$	$\geq 40$ to $< 60$	$\geq 60$ to $< 80$	$\geq 80$

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray <sup>b</sup>	Consider	Consider	Consider	Consider
ECG	Consider	Consider	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	Consider	Consider	Consider	Consider

<sup>b</sup>Chest x-rays may be considered if there has been a change in patient's symptoms, or if the patient needs ventilator support

#### ASA Grade 3: Adults with Comorbidity from Respiratory Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Consider	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	Consider	Consider	Consider	Consider

#### ASA Grade 2: Adults with Comorbidity from Renal Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG <sup>d</sup>	Consider	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

<sup>d</sup>Depending on the cause of renal disease (e.g., diabetes and hypertension)

#### ASA Grade 3: Adults with Comorbidity from Renal Disease

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Consider	Consider	Consider	Consider
ECG	Consider	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis	Consider	Consider	Consider	Consider
Blood gases	Consider	Consider	Consider	Consider
Lung function	No	No	No	No

### Neurosurgery

ASA Grade 1: Children <16 years

	Age				
Test	<6 months	≥6 to <12 months	≥1 to <5 years	≥5 to <12 years	≥12 to <16 years
Chest x-ray	No	No	No	No	No
ECG	No	No	No	No	No
Full blood count	Consider	Consider	Consider	Consider	Consider
Haemostasis	Consider	Consider	Consider	Consider	Consider
Renal Function	Yes	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No	No
Urine analysis <sup>a</sup>	Consider	Consider	Consider	Consider	Consider

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

ASA Grade 1: Adults ≥16 years

	Age (years)			
Test	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	No	No	Consider	Consider
ECG	Consider	Consider	Yes	Yes
Full blood count	Consider	Consider	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal Function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis <sup>a</sup>	Consider	Consider	Consider	Consider

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

### Cardiovascular Surgery

### ASA Grade 1: Children (<16 years)

Test	Age				
	<6 months	≥6 to <12 months	≥1 to <5 years	≥5 to <12 years	≥12 to <16 years
Chest x-ray	Yes	Yes	Yes	Yes	Yes
ECG	Yes	Yes	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider	Consider
Renal Function	Yes	Yes	Yes	Yes	Yes
Random glucose	No	No	No	No	No
Urine analysis <sup>a</sup>	Consider	Consider	Consider	Consider	Consider

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

### ASA Grade 1: Adults (≥16 years)

Test	Age (years)			
	≥16 to <40	≥40 to <60	≥60 to <80	≥80
Chest x-ray	Yes	Yes	Yes	Yes
ECG	Yes	Yes	Yes	Yes
Full blood count	Yes	Yes	Yes	Yes
Haemostasis	Consider	Consider	Consider	Consider
Renal Function	Yes	Yes	Yes	Yes
Random glucose	Consider	Consider	Consider	Consider
Urine analysis <sup>a</sup>	Consider	Consider	Consider	Consider

<sup>a</sup>Dipstick urine testing in asymptomatic individuals is not recommended (UK National Screening Committee)

### Tests for the Sickle Cell Gene in Adults and Children

Appropriateness of testing in patients from the following ethnic groups	
North African	Yes
West African	Yes
South/sub-Saharan African	Yes
Afro Caribbean	Yes
Should informed consent be obtained?	Yes

The following recommendations and observations are in addition to those shown in the table above:

- The sickle cell gene is found in many nationalities including families that come from Africa, the Caribbean, the Eastern Mediterranean, Middle East and Asia.

It has also been detected in Cypriot people and a few other white ethnic groups.

- It is important to offer to test all people considered to be at risk before an anaesthetic, both at hospital and dental clinics. This is especially important for patients who have a family history of ethnic groups considered to be at risk, who have a family history of homozygous sickle cell anaemia or sickle cell trait and who do not have a surgical history where it may have been detected previously.
- People of ethnic origin considered to be at risk should be offered screening, with genetic counselling before and after screening.
- Appropriate counselling for this test is important so that patients are able to give their informed consent, as there may be implications for patients who discover they are carriers of the sickle cell gene. The results of testing, even when negative, should be reported to families, with the patient's consent, and documented in the patient's medical record to avoid unnecessary repeat testing.

### Pregnancy Test

Pregnancy testing should be carried out in female patients of reproductive age:	
With history of last menstrual period	Consider
Who says that it is not possible for her to be pregnant	Consider
Who says it is possible that she may be pregnant	Yes
Should informed consent be obtained?	Yes

The following recommendations and observations are in addition to those shown in the table above:

- The need to test for pregnancy depends on the risk presented to the fetus by the anaesthetic and surgery. All women of childbearing age should be asked sensitively whether or not there is any chance that they may be pregnant.
- Women must be made aware of the risks of surgery to the fetus.
- A pregnancy test should be carried out with the woman's consent if there is any doubt about whether the woman may be pregnant.
- Before having a chest x-ray, all women of childbearing age should be asked sensitively whether they may be pregnant

### Good Practice Recommendations

During the development of this guideline, the Guideline development Group (GDG) agreed certain principles of good practice. Although the aspects of preoperative testing to which they relate were not strictly within the scope of the guideline, it is important to describe them because the guideline was developed with the assumption that these principles were in place.

### Ensuring Clinical Competence

It is important to ensure that staff undertaking clinical preoperative assessments receive appropriate education and training to allow them to apply the guideline correctly.



## Preoperative Assessment

It is crucial to ensure that a thorough medical history is taken from the patient to inform the recommendations about which preoperative tests to carry out. Taking a thorough medical history requires someone with the appropriate training.

## Timing and Setting of Tests

The consensus process did not cover the issue of who should carry out the preoperative tests. However, it is clear that preoperative tests are often ordered or carried out by nurses in preoperative assessment clinics. The timing of tests should be appropriate for the tests concerned. It may be appropriate both from the doctor's and patient's perspective to test for certain conditions at the earliest stage possible, after a patient has been placed on the waiting list for an operation, so that there is time for the patient to be treated and for their condition to stabilise, ensuring patients are in the best possible state when they have surgery.

Some tests could be carried out in the primary care setting by the patient's General Practitioner (GP) or practice nurse. For example, when a patient is listed for a particular operation it may be appropriate for the consultant in charge of the patient's care to consider the possible tests that may be required for the patient and, after discussion with the patient, to inform their GP. Excellent communication between primary and secondary care, to ensure that test results are shared, would be essential if such changes in the responsibility and timing of testing were to be implemented.

Whoever carries out the tests, protocols for testing should be followed. This is particularly important for tests like urine analysis (dipstick), where not following the recommended protocol may render the result of the test meaningless.

## Patient Information and Consent

Staff undertaking clinical preoperative assessments should discuss with patients which tests are recommended (or required), what they involve, and why they are being carried out.

Decisions about whether or not to test should follow discussion between the patient and the doctor or nurse, especially where there is uncertainty about whether a test should be recommended or not. For some tests, a positive result carries a far greater significance for the patient than others, such as testing for previously undetected diabetes, the sickle cell gene, and pregnancy.

Patients should have access to information about the tests and the possible implications of a positive result so that they can give their informed consent. Doctors or nurses carrying out or ordering tests should write in the patient's notes that they have discussed the recommended tests and their implications with the patient.

Patients should be informed of the results of tests and about the implications for treatment, and any longer term implications for their health, if the results are abnormal.

For further guidance, clinicians should refer to the Good Practice in Consent guidance on issues of consent in the NHS (available from: [www.doh.gov.uk/consent](http://www.doh.gov.uk/consent)). This guideline supports the advice given in that publication - that it is "a general legal and ethical principle that valid consent must be obtained before starting treatment or physical examination, or providing personal care, for a patient" and that patients should have access to sufficient information about risks, benefits and alternatives to be able to make an informed decision about whether to consent.

## CLINICAL ALGORITHM(S)

Clinical algorithms are provided in the full version of the guideline for:

- Look-up tables by ASA grade
- Look-up tables by surgical grade

## EVIDENCE SUPPORTING THE RECOMMENDATIONS

### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based upon the best available evidence. All of the recommendations are grade D recommendations, which are based upon level IV evidence - that is, expert opinion derived from a consensus development process and the clinical experience of the Guideline Development Group.

## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

- Identification of unsuspected conditions that may require treatment before surgery or a change in surgical or anaesthetic management
- Decrease in the delay or cancellation of surgical procedures
- Planning care for patients who may require special care following surgery (i.e., in a high dependency unit or intensive care unit)
- Decreased morbidity and mortality due to surgery
- Decrease in the risks associated with preoperative tests performed without clinical indication

### POTENTIAL HARMS

- Occurrence of false positives may lead to unnecessary, costly, and possibly harmful treatments or further investigations and delays in surgery.
- Some evidence also suggests that clinicians do not change the management of their patients even in the light of true positive abnormal preoperative test findings in healthy individuals.
- Chest x-rays results in exposure of the patient to radiation and the risk associated with it.

## CONTRAINDICATIONS

### CONTRAINDICATIONS

Certain conditions are possible contraindications to some regional anaesthetic techniques, such as aortic stenosis, ischaemic heart disease, and clotting difficulties.

## QUALIFYING STATEMENTS

### QUALIFYING STATEMENTS

- This guidance represents the view of the Institute, which was arrived at after careful consideration of the evidence available. Health professionals are expected to take it fully into account when exercising their clinical judgment. The guidance does not, however, override the individual responsibility of health professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.
- Clinical guidelines are "systematically developed statements which assist clinicians and patients in making decisions about appropriate treatment for specific conditions." The recommendations in this guideline were arrived at after careful consideration of the available evidence and formal assessment of the opinions of members of two consensus panels using a recognised method for developing consensus. However, the recommendations should be considered only as a guideline. Healthcare professionals involved in pre-, peri- and postoperative care must use their professional knowledge and judgement when applying the recommendations to the management of individual patients.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

#### General

National Health Service (NHS) organisations should review their existing practice for preoperative testing against this guideline. The review should consider the resources required to implement fully the recommendations set out in Section 1 of the short version of original guideline document (and in the "Major Recommendations" section of this summary), the people and processes involved, and the timeline over which full implementation is envisaged. Clearly, it is in the interests of patients that the implementation timeline is as rapid as possible.

Relevant local clinical guidelines, care pathways, and protocols should be reviewed in the light of this guidance and revised accordingly.

This guideline should be used in conjunction with the guidance from the NHS Modernisation Agency on preoperative assessment for inpatients and day surgery, which is available from [www.modern.nhs.uk/theatreprogramme](http://www.modern.nhs.uk/theatreprogramme).

## Audit

Implementation should be audited (in addition to auditing compliance with the guideline), and the methods for auditing implementation should be maintained to provide a mechanism for regular review, ensuring that a revised guideline or relevant new evidence is disseminated promptly as it becomes available and new recommendations are incorporated into local guidance.

To audit compliance with the guideline, it is recommended that data are collected to obtain the following summary statistics.

- The percentage of patients who are not tested, in compliance with the guideline
- The percentage of patients who are tested, in compliance with the guideline
- The percentage of patients who are not tested, against the recommendations of the guideline
- The percentage of patients who are tested, against the recommendations of the guideline
- The percentage of patients who are tested and for whom one or more reasons for testing are documented
- The percentage of patients for whom the minimum dataset (see below) is available.

It is recommended that a minimum dataset (see below) is collected, at least when ordering tests in contravention of the guideline or where the guideline is uncertain. Ideally the minimum dataset would be collected when any test is ordered. Auditing compliance with the guideline will be much more difficult if this minimum dataset is not collected at the time of ordering.

### Minimum Dataset at Time of Ordering Test

1. American Society of Anesthesiologists (ASA) grade of patient (potentially available from other sources since it is proposed that this item of information will become part of the Hospital Episode Statistics minimum dataset)
2. Main comorbidity (e.g., renal, respiratory, and cardiovascular; main categories could be pre-coded on the test order form)
3. Grade of surgery
4. Reasons for ordering

## IMPLEMENTATION TOOLS

Audit Criteria/Indicators  
Clinical Algorithm  
Foreign Language Translations  
Patient Resources  
Wall Poster

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Getting Better

### IOM DOMAIN

Effectiveness  
Patient-centeredness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

National Collaborating Centre for Acute Care. Preoperative tests: the use of routine preoperative tests for elective surgery: evidence, methods & guidance. London (UK): National Institute for Clinical Excellence (NICE); 2003 Jun. 108 p. [118 references]

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

2003 Jun

### GUIDELINE DEVELOPER(S)

National Collaborating Centre for Acute Care - National Government Agency [Non-U.S.]

### SOURCE(S) OF FUNDING

National Institute for Health and Clinical Excellence (NICE)

### GUIDELINE COMMITTEE

Guideline Development Group

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## FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

In accordance with guidance from the National Institute for Health and Clinical Excellence (NICE), all Guideline Development Group members' interests were recorded on a standard declaration form that covered consultancies, fee-paid work, share-holdings, fellowships, and support from the healthcare industry.

## GUIDELINE STATUS

This is the current release of the guideline.

## GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format [PDF] format from the [National Institute for Health and Clinical Excellence \(NICE\) Web site](#).

## AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Preoperative tests: the use of routine preoperative tests for elective surgery. NICE guideline 2003 Jun. 30 p. Available in Portable Document Format (PDF) from the [National Institute for Health and Clinical Excellence \(NICE\) Web site](#).
- Preoperative tests: the use of routine preoperative tests for elective surgery. Appendices, guidelines & information. 2003 Jun. 236 p. Available from the [NICE Web site](#).

- Preoperative tests: the use of routine preoperative tests for elective surgery. A4 summary. 2003 Jun. 28 p. Available in Portable Document Format (PDF) from the [NICE Web site](#).
- Preoperative tests: the use of routine preoperative tests for elective surgery. Guideline poster. 2003 Jun. 2 p. Available in Portable Document Format (PDF) from the [NICE Web site](#).

Additionally, Audit Criteria can be found in Section 6.22 of the [original guideline document](#)

## PATIENT RESOURCES

The following is available:

- Routine tests carried out before a planned surgical operation. Understanding NICE guidance -information for people who are going to have a planned operation, their carers, and the public. 2003 Jun. 16 p. Available in English and Welsh in Portable Document Format (PDF) from the [National Institute for Health and Clinical Excellence \(NICE\) Web site](#).

Print copies: Available from the National Health Service (NHS) Response Line 0870 1555 455. ref: N0232.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

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